NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

ACCESS ROAD

(ft)

CODE 560

DEFINITION

A travelway constructed as part of a conservation plan.

SCOPE

This standard applies to vehicular and equipment roads constructed to provide access to farms, ranches, fields, conservation systems, structures, woodlands, and recreation areas.

PURPOSES

This practice may be applied as part of a resource management system to support the following purpose:

To provide a fixed route for travel for moving livestock, produce, equipment, and supplies; and to provide access for proper operation, maintenance, and management of conservation enterprises while controlling runoff to prevent erosion and maintain or improve water quality. To improve aquatic habitat by providing passage of stream flow, so that fish and other aquatic species may fully utilize stream habitats for spawning and rearing.

CONDITIONS WHERE PRACTICE APPLIES

This standard applies to vehicular and equipment roads constructed to provide access to farms, ranches, fields, conservation systems, structures, woodlands, and recreation areas.

Where access is needed from a private or public road or highway to a conservation enterprise or measure.

Where travelways are needed in a planned land use area.

On existing public roads where the hydraulic structures are not adequate to support the intended use by aquatic species.

CRITERIA

General. Access roads shall be designed to serve the enterprise or planned use with the expected vehicular or equipment traffic. The type of vehicle or equipment, speed, loads, climatic, and other conditions under which vehicles and equipment are expected to operate need to be considered.

Sound engineering practices shall be followed to insure that the road meets the requirements of its intended use and that maintenance requirements are in line with operating budgets.

Permits and Regulations. Where general public use is anticipated, roads should be designed to meet applicable federal, state, or local criteria.

Location. Roads shall be located to serve the purpose intended, to facilitate the control and disposal of water, to control or reduce erosion, to make the best use of topographic features, and to include scenic vistas where possible. The roads should generally follow natural contours and slopes to

minimize disturbance of drainage patterns. Roads should be located where they can be maintained and so water management problems are not created. To reduce stream disturbance, roads should not be located within the geomorphic belt width of streams, except where crossings are located.

Alinement. The gradient and vertical and horizontal alinement shall be adapted to the intensity of use, mode of travel, and the level of development.

Grades normally should not exceed 10 percent except for short lengths, but maximum grades of 20 percent or more may be used if necessary for special uses.

Width. The minimum width of the roadbed is 14 ft for one-way traffic and 20 ft for two-way traffic. Single-lane logging or special-purpose roads have a minimum width of 10 ft, with greater widths at curves and turnouts. The two-way traffic width shall be increased approximately 4 ft for trailer traffic.

The minimum tread width is 10 ft for one-way traffic and 15 ft for two-way traffic. The tread width for two-way traffic shall be increased approximately 4 ft for trailer traffic.

The minimum shoulder width is 2 ft on each side of the tread width.

Where turnouts are used, road width shall be increased to a minimum of 20 ft for a distance of 30 ft.

Side slopes. All cuts and fills shall have side slopes designed to be stable for the particular site conditions.

Areas with geological conditions and soils subject to slides shall be avoided or treated to prevent slides.

Drainage. The type of drainage structure used will depend on the type of enterprise and runoff conditions. Culverts, bridges, or grade dips for water management shall be provided at all natural drainageways. The capacity and design shall be consistent with sound engineering principles and shall be adequate for the class of vehicle, type of road, development, or use.

Roadside ditches shall be adequate to provide surface drainage for the roadway and deep enough, as needed to serve as outlets for subsurface drainage. Channels shall be designed to be on stable grades or protected with structures or linings for stability.

Water breaks or bars may be used to control surface runoff on low-intensity use forest or similar roads.

Surfacing. Access roads shall be given a wearing course or surface treatment if required by traffic needs, climate, erosion control, or dust control. The type of treatment depends on local conditions, available materials, and the existing road base. If these factors or the volume of traffic is not a problem, no special treatment of the surface is required.

Unsurfaced roads may require controlled access to prevent damage or hazardous conditions during adverse climatic conditions.

Toxic or acid-forming materials shall not be used on roads. This should not be construed to prohibit use of chemicals for dust control and snow and ice removal.

Traffic safety. Passing lanes, turnouts, guardrails, signs, and other facilities as needed for safe traffic flow shall be provided. Traffic safety shall be a prime factor in selecting the angle and grade of the intersection with public highways. Preferably, the angles shall be not less than 85 degrees. The public highway shall be entered either at the top of a hill or far enough from the top or a curve to provide visibility and a safe sight distance. The clear sight distance to each side shall not be less than 300 feet, if site conditions permit.

Erosion control. If soil and climatic conditions are favorable, roadbanks and disturbed areas shall be vegetated as soon as possible and skid trails, landings, logging, and similar roads shall be vegetated after harvesting or seasonal

use is completed. If the use of vegetation is precluded and protection against erosion is needed, protection shall be provided by nonvegetative materials, such as gravel or other mulches

Roadside channels, cross drains, and drainage structure inlets and outlets shall be designed to be stable without protection. If protection is needed, riprap or other similar materials shall be used.

Watercourses and water quality shall be protected during and after construction by erosion-control facilities and maintenance. Filter strips, sediment and water control basins, and other conservation practices shall be used and maintained as needed.

Dead end roads shall be provided with a turnaround. In some areas turnarounds may also be desirable for stream, lake, recreation, or other access purposes.

Parking space as needed shall be provided to keep vehicles off the road or from being parked in undesirable locations.

Considerations. Visual resources and environmental values shall be considered in planning and designing the road system.

ADDITIONAL CRITERIA TO IMPROVE AQUATIC HABITAT BY PROVIDING PASSAGE OF STREAM FLOW, SO THAT FISH AND OTHER AQUATIC SPECIES MAY FULLY UTILIZE STREAM HABITATS FOR SPAWNING AND REARING

Aquatic Species

Culverts will be designed to pass the target fish species of concern during the time of year determined to be the critical fish passage period. State and local laws pertaining to fish passage will be followed. Target fish species will be determined under consultation with fish biologists and other appropriate animal resource specialists.

Hydrology of Culverts

The maximum flow for capacity design, and the fish passage flows will be determined by the use of appropriate hydrologic analysis. The maximum flood frequency for capacity design selected shall be based on the type, size, and use of the road, crossing, or pathway, and shall be in keeping with state and local laws and standards. The fish passage flows will be selected on the basis of designing for the weakest species and the minimum and maximum flows during the fish passage period. Consideration shall be given to analysis of minimum fish passage period flow for allowable depth, as well as the maximum fish passage period flow for allowable velocity.

Hydraulics of Culverts

Culverts shall be designed to safely pass the maximum design flow and associated debris. The culvert size, shape, and cross-section shall provide adequate depth and low enough velocity to pass the weakest target species during the fish passage period. The maximum flood flow and fish passage flow shall be analyzed considering the upstream channel characteristics, the entrance and exit conditions, and the size, shape, and roughness of the culvert.

Structural Design of Culverts

Culverts will be designed to safely handle all anticipated loading, considering weight of backfill, depth of cover, and traffic loads. Culverts under public roads will be designed according to the standards of the jurisdiction controlling the road.

Considerations

Consideration should be given to designing culverts for the passage of juvenile as well as adult fish. Consideration should also be given to the analysis of the channel geometry of the stream reach. An existing culvert often changes the stream channel profile, cross-section, and geometry. A new replacement culvert on a different grade may have negative effects on channel stability, and could require grade control structures. Also, replacement of an existing culvert could provide opportunities

for changes to the channel morphology, which can improve the stream's ability to support aquatic habitat. Any analysis made of the channel morphology should include the existing profile, cross-section, planform, and biological material features of the channel. A decision to modify the culvert stream reach should be made in consultation with the appropriate biological and geological specialists.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing access roads shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be developed that is consistent with the purposes of the practice, its intended life, safety requirements, and the criteria for its design. The plan shall include the timing of inspections and the items to be inspected. The plan shall include the requirement that debris deposited immediately upstream or downstream of culverts shall be removed in a timely manner to ensure that the culvert's capacity is not reduced, or the fish passage goals are not impaired.